

# VENSTAR®

## COMMERCIAL MODEL T4900SCH

DIGITAL THERMOSTAT  
Up To 4 Heat & 2 Cool Stages  
with Humidity Control  
Perfect for the classroom



# EXPLORER®

**Simply connected.**

*Anytime. Anywhere.\**

Optional accessories  
available, including Wi-Fi



Wi-Fi



## OWNER'S MANUAL AND INSTALLATION INSTRUCTIONS





## CAUTION

Follow the Installation Instructions before proceeding. Set the thermostat mode to “OFF” prior to changing settings in setup or restoring Factory Defaults.

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### FCC Compliance Statement

This equipment has been tested and found to comply with the limits for an intentional radiator, pursuant to Part 15, subpart C of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference in radio communications. However, there is no guarantee that the interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that of the receiver.
- Consult the dealer or an experienced radio or TV technician for help.

Notice: Only peripherals complying with FCC limits may be attached to this equipment. Operation with noncompliant peripherals or peripherals not recommended by Venstar, is likely to result in interference to radio and TV reception. Changes or modifications to the product, not expressly approved by Venstar could void the user's authority to operate the equipment.

### FCC - INDOOR Mobile Radio Information:

To comply with FCC/IC RF exposure limits for general population / uncontrolled exposure, the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

This Device complies with Industry Canada License-exempt RSS standard(s). Operation is subject to the following two conditions: 1) this device may not cause interference, and 2) this device must accept any interference, including interference that may cause undesired operation of the device.

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

*Cet appareil est conforme avec Industrie Canada, exempts de licence standard RSS(s). Son fonctionnement est soumis aux deux conditions suivantes: 1) ce dispositif ne doit pas causer d'interférences, et 2) ce dispositif doit accepter toute interférence, y compris les interférences qui peuvent causer un mauvais fonctionnement de l'appareil.*

*En vertu des règlements d'Industrie Canada, cet émetteur de radio ne peut fonctionner en utilisant une antenne d'un type et maximale (ou moins) Gain approuvé pour l'émetteur par Industrie Canada. Pour réduire les interférences radio potentielles aux autres utilisateurs, le type d'antenne et son gain doivent être choisis afin que la puissance isotrope rayonnée équivalente (PIRE) ne est pas plus de ce qui est nécessaire pour une communication réussie.*

We, Venstar, declare under our sole responsibility that the device to which this declaration relates: Complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC ID: MUH-SKYPORT3

IC: 12547A-SKYPORT3

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This Explorer thermostat has the ability to receive updates to its firmware. Periodically firmware updates are released by the manufacturer to add features and/or performance enhancements. This manual was produced reflecting the most current firmware/feature set at the time of publication, firmware rev. 12. Firmware releases after rev. 12 may not be adequately depicted in this manual. Please refer to the appropriate website or contact your place of purchase to learn about changes to the thermostat after firmware release 12.



Industry  
Canada

Industrie  
Canada

## Glossary of Terms

**Auto-Changeover:** A mode in which the thermostat will turn on the heating or cooling based on room temperature demand.

**Cool Setpoint:** The warmest temperature that the space should rise to before cooling is turned on (without regard to deadband).

**Deadband:** The number of degrees the thermostat will wait, once a setpoint has been reached, before energizing heating or cooling.

**Dehumidify:** To reduce the amount of moisture in the air.

**Differential:** The forced temperature difference between the *heat setpoint* and the *cool setpoint*.

**Heat Setpoint:** The coolest temperature that the space should drop to before heating is turned on (without regard to deadband).

**Humidify:** To increase the amount of moisture in the air.

**Icon:** The word or symbol that appears on the thermostat display.

**Mode:** The current operating condition of the thermostat (i.e. Off, Heat, Cool, Auto).

**Non-Programmable Thermostat:** A thermostat that does not have the capability of running *Time Period Programming*.

**Override:** During programmed unoccupied periods, pressing the Override button will force the thermostat into occupied settings. During programmed occupied periods, pressing the Override button will force the thermostat into unoccupied settings.

**Programmable Thermostat:** A thermostat that has the capability of running *Time Period Programming*.

**Reheat:** Running the cooling and 2nd stage strip heaters at the same time in order to *dehumidify* the air without significantly cooling down the room temperature.

**Temperature Swing:** *Same as Deadband.*

**Time Period Programming:** A program that allows the thermostat to automatically adjust the *heat setpoint* and/or the *cool setpoint* based on the time of the day.

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# Get To Know Your Thermostat

Ambient Light Sensor

Optional Wireless Module

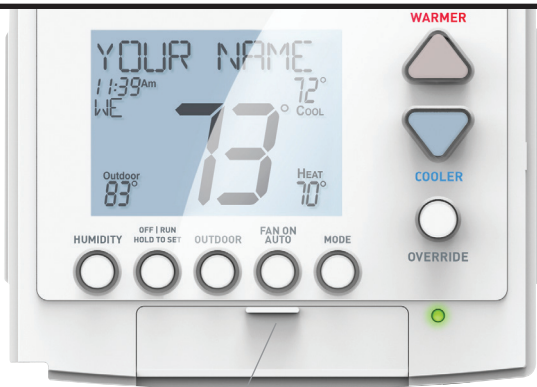
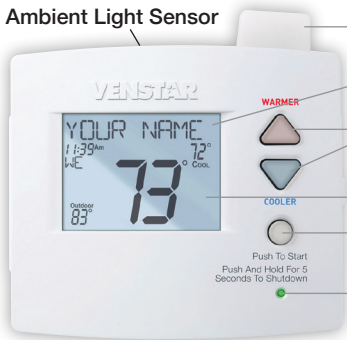
Backlit, Scrolling Display

Backlit Cooler & Warmer Buttons

Backlit LCD Display

Override Button

Heat or Cool Demand Indicator  
Red = Heat, Green = Cool



Setup Buttons Behind Door

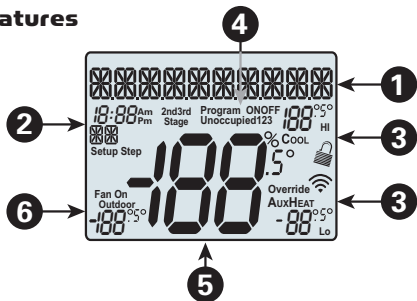
# Get To Know Your Thermostat



Setup Buttons

# Get To Know Your Thermostat

## Display Features

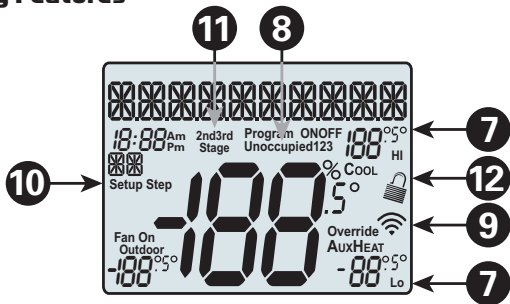



- 1** The scrolling display will be used to help you easily navigate the setup screens in the thermostat.
- 2** Clock with Day of the Week  
Indicates the current time and day. This clock is also used to program the time period schedules.
- 3** Mode Indicators  
Selects the operational mode of the equipment.  
**HEAT** - Indicates the heating mode.  
**COOL** - Indicates the air conditioning mode.  
**HEAT & COOL** - Indicates the system will automatically change-over between heat and cool modes as the temperature varies.  
**OFF** - Indicates heating and cooling is turned off.
- 4** Program icon  
Indicates that Time Period Programming is running or is enabled to be set.
- 5** Room Temperature Display  
Indicates the current room temperature and displays the outdoor temperature when selected.
- 6** Outdoor icon  
Indicates the temperature displayed is from the optional outdoor sensor.



# Get To Know Your Thermostat

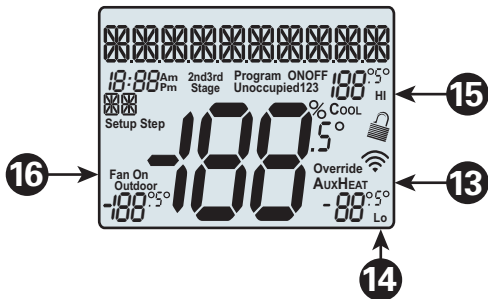
## Display Features



- 7** **Desired Set Temperature**  
Indicates desired room temperature(s). Also displays the highest and lowest temperatures for the day.
- 8** **Occupied & Unoccupied icons**  
When running the program, shows Occupied after start button pressed, Unoccupied after program stop time
- 9** **Wi-Fi icons**  
One dot indicates the thermostat recognizes the wireless module. The “pull” icon indicates the thermostat is currently connected to the Local access point, via the optional Wi-Fi Module.
- 10** **Setup Step icon**  
Indicates the step number when the thermostat is in the setup mode.
- 11** **2nd and 3rd Stage icons**  
Indicates what stage of cooling or heating is currently energized.
- 12**  **icon**  
Indicates the keypad has been locked.

# Get To Know Your Thermostat

## Display Features



### 13 AuxHeat icon

Indicates 2nd stage electric strip heat is being used when the thermostat is programmed for Heat Pump operation. Only the Aux icon will appear during Cool to Dehumidify to indicate Reheat operation.

### 14 Lo icon

Indicates the lowest recorded outdoor temperature for the day.\*

### 15 Hi icon

Indicates the highest recorded outdoor temperature for the day.\*

### 16 Fan On icon

Indicates constant, continuous fan operation. When **Fan On** is not lit - indicates the fan will only operate when necessary to heat or to cool.

\* *Hi and Lo Temperatures for the day, reset at midnight.*

# Quick Start

## During Setup and Programming:

Press the **WARMER** or **COOLER** buttons to modify the selection.

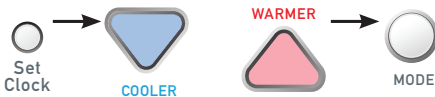
Press the **MODE** button to advance and confirm through the setup steps.

## Setting the Clock and Day\*

*\*Not available when wi-fi module is present*

Press the SET CLOCK button. Adjust the clock using the WARMER or COOLER buttons. Press MODE to advance to the day setting. Adjust the day using the WARMER or COOLER buttons. Press the SET CLOCK button to confirm settings.

**TIP:** To adjust the time by hours press and hold the FAN button while pressing the WARMER or COOLER buttons.



## Selecting the Heat or Cool Mode

Select mode by pressing the **MODE** button.



**Heating Only** - Only the heating operation will be controlled by the thermostat in this mode.

**Cooling Only** - Only the cooling operation will be controlled by the thermostat in this mode.

**Heating or Cooling (Auto-Changeover)** - AUTO will automatically select heat or cool based on room temperature demand.

**OFF** - OFF indicates both heating and air conditioning systems are turned off.

# Quick Start

## Selecting your desired temperature

**AUTO-CHANGEVER MODE** - Pressing the WARMER or COOLER buttons in Auto mode will adjust both the heat and cool setpoints simultaneously. To adjust heat and cool setpoints individually, choose HEAT mode to adjust the heat setpoint and COOL mode to adjust the cool setpoint, then return to AUTO mode.

**HEAT OR COOL MODE** - Pressing the WARMER or COOLER buttons in Heat or Cool mode will adjust only the heat or cool setpoints individually displayed.

## Using the Fan Button

**Fan On** indicates constant fan operation. Fan On is not allowed when the thermostat is in the OFF mode. Pressing the FAN button toggles this feature. If you don't see "Fan On", the fan is in auto mode and will only turn on during a heat or cool demand. The fan is forced into auto mode when running the program and the thermostat shows "unoccupied".



## Using the Override/Start Button

The Override button (labeled Push To Start on the door of the thermostat) has multiple uses depending on the time of day when the button is pushed. One unique feature of the T4900SCH is that when running a program, it will not automatically bring in occupied setpoints at the designated start time. A single press of this Override/Start button is needed within the occupied start/stop times in order to bring in those comfort setpoints. This allows for variable start times in each classroom with the actual starting event being a single press of the Override/Start button, typically by the teacher prior to the start of the day.



**NOTE: Override may only be used when the thermostat is set to PROGRAM ON.**

This button has no effect unless the thermostat is running a program so the following only applies when the program is On:

**Outside of the preprogrammed Start/Stop times for the day:** the thermostat should be in Unoccupied. A single press of the Override/Start button will temporarily bring in occupied setpoints for the amount of time specified in Setup Step #58. Pressing the Override/Start button again will cancel the override timer, returning the thermostat to unoccupied settings.

**Within the Start/Stop times for the day:** the thermostat should enter occupied and bring in occupied setpoints for the rest of the day until the Stop time. If the security settings allow, the setpoints may be adjusted for classroom comfort.

*(continued)*

# Quick Start

The thermostat should automatically return to unoccupied settings at the Stop time. If the classroom is vacated early, pressing the Override/Start button for 5 seconds will bring in unoccupied settings immediately (and will show 'OF' for the setpoints).

**Note:** During a programmed holiday, this button can only be used to override to the occupied settings for the time specified in Setup Step #58. It is not allowed to function as a start button since holiday settings take priority.

## Override Hours (Setup Step 64)

Specifies how long the thermostat will allow occupied setpoints outside of classroom hours. (0-6 hours). **Note: if running a program and setup step #71 (light functions as start) is set to ON, turning lights on for at least 2 minutes will bring in occupied setpoints for the rest of the day**

## Viewing the Temperature Sensors

**OUTDOOR TEMP** - Press the OUTDOOR button to view the current outdoor temperature. The high and low temperatures for the day will also be displayed. The high and low temperatures reset at 12:00 am. If connected to a Skyport account, pressing outdoor button will show the temperatures for your location if you don't have a wired sensor connected. Press the OUTDOOR button again to view any connected wired sensor (remote or SUPPLY).

OUTDOOR



**Note: If no outdoor sensor is connected, and there isn't outdoor temperature via Wi-Fi, then 2 dashes [- -] will appear with the first button press.**

**REMOTE/SUPPLY TEMP** - Press the **Accessory Status** button to view linked wireless sensors and other accessories. Press the **Accessory Status** button to return to the main screen. Setup step #43 selects the use of the wired temperature sensor.

ACCESSORY  
STATUS



## Viewing the Indoor Humidity Sensor

**IMPORTANT: Allow at least 2 minutes after the thermostat is powered on for the humidity to read correctly.**

Press the HUMIDITY button then the mode button to display the current humidity measured at the thermostat. The room's relative humidity is displayed in the top left corner. The humidification setpoint appears in the larger, center display and can be adjusted using the WARMER or COOLER buttons. Press the MODE button again to view and adjust the dehumidification setpoints. Press the HUMIDITY or MODE button again to confirm settings and return to normal operation.

HUMIDITY



**Note: Due to variations in environmental and equipment conditions, it is not always possible to achieve the desired humidification or dehumidification setpoint.**

# Installation Instructions

## Remove and Replace the old thermostat

To install the thermostat properly, please follow these step by step instructions. If you are unsure about any of these steps, call a qualified technician for assistance.

- Assemble tools: Flat blade screwdriver, wire cutters and wire strippers.



- Make sure your Heater/Air Conditioner is working properly before beginning installation of the thermostat.
- Carefully unpack the thermostat. Save the screws, any brackets, and instructions.
- Turn off the power to the Heating/Air Conditioning system at the main fuse panel. Most residential systems have a separate breaker for disconnecting power to the furnace.
- Remove the cover of the old thermostat. If it does not come off easily, check for screws.
- Loosen the screws holding the thermostat base or subbase to the wall and lift away.
- If you have a smart phone handy, take a photo of the wiring for future reference.
- Disconnect the wires from the old thermostat. Tape the ends of the wires as you disconnect them, and mark them with the letter of the terminal for easy reconnection to the new thermostat.
- Keep the old thermostat for reference purposes, until your new thermostat is functioning properly.

# Installation Instructions

## Wire Connections

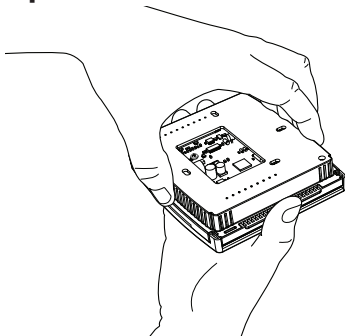
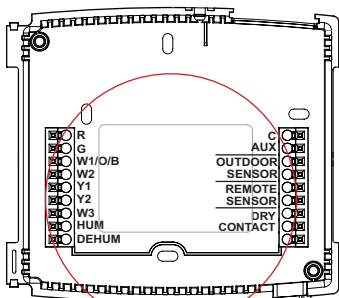
If the terminal designations on your old thermostat do not match those on the new thermostat, **refer to the chart below or the wiring diagrams that follow.**

| Wire from the old thermostat terminal marked | Function           | Install on the new thermostat connector marked |
|--|--------------------|--|
| G or F                                       | Fan                | G  |
| Y1, Y  | Cooling            | Y1   |
| W1, W  | Heating            | W1/O/B   |
| Rh, R, M, Vr, A                              | Power              | R  |
| C  | Common             | C  |
| O/B  | Rev. Valve         | W1/O/B*  |
| W2   | 2nd Stage Heat     | W2   |
| Y2   | 2nd Stage Cooling  | Y2   |
| W3   | 3rd Stage Heat     | W3   |
| H, Hum                                       | Humidity           | HUM  |
| D, Dehum                                     | Dehumidity         | DEHUM  |
| Ck1  | Dry Contact Switch | DRY CONTACT                                    |
| CKGND  | Dry Contact Switch | DRY CONTACT                                    |

\* O/B is used if your system is a Heat Pump.

# Installation Instructions

## The Explorer Thermostat Backplate



**To remove the thermostat backplate:** Gently separate the display from the base by pulling first from one side, then the other until the two pieces unsnap. A small screwdriver may be used, very carefully, to start separating the two pieces.

|               |                              |                       |                            |
|---------------|------------------------------|-----------------------|----------------------------|
| <b>R</b>      | 24 VAC return                | <b>C</b>              | 24 VAC common              |
| <b>G</b>      | Fan relay                    | <b>AUX</b>            | Aux output                 |
| <b>W1/O/B</b> | 1st stage heat circuit       | <b>OUTDOOR SENSOR</b> | Outdoor sensor connections |
| <b>W2</b>     | 2nd stage heat circuit       | <b>REMOTE SENSOR</b>  | Remote sensor connections  |
| <b>Y1</b>     | 1st stage compressor relay   | <b>DRY CONTACT</b>    | Dry Contact connections    |
| <b>Y2</b>     | 2nd stage compressor relay   |                       |                            |
| <b>W3</b>     | 3rd stage heat circuit       |                       |                            |
| <b>HUM</b>    | Humidifier control circuit   |                       |                            |
| <b>DEHUM</b>  | Dehumidifier control circuit |                       |                            |

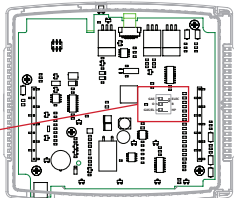
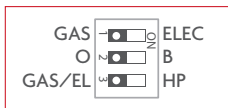
**IMPORTANT:** This thermostat requires both R (24 VAC Return) and C (24 VAC Common) be connected to the backplate terminals.



# Installation Instructions

## Check Dip Switch

Ensure which switch is correct for your system. Dip switches are located on the back of the thermostat.



GAS ELEC



OR

GAS ELEC



1. When GAS/EL or HP is set for GAS/EL:  
This switch (GAS or ELEC) controls how the thermostat will control the Fan (G) terminal in heating mode. When GAS is chosen, the thermostat will not energize the Fan (G) terminal in heating. When ELEC is chosen the thermostat will energize the fan in heating.

2. When GAS/EL or HP is set for HP:  
This switch (GAS or ELEC) defines the Aux Heat type. When GAS is chosen, the auxiliary heat will not be allowed to run during heat pump operation. When ELEC is chosen, up to two stages of auxiliary strip heat will be allowed to run.



OR



For Heat Pump Only

When the GAS/EL or HP dip switch is configured for HP, this dip switch (O or B) must be set to control the appropriate reversing valve. If O is chosen, the W1/O/B terminal will energize in cooling. If B is chosen, the W1/O/B terminal will energize in heating.



OR



This dip switch configures the thermostat to control a conventional gas/electric system or a heat pump. If your system is anything other than a heat pump, leave this switch set for GAS/EL.

# Installation Instructions

## Sample Wiring Diagrams

### Conventional Heating and Cooling Systems

#### 3 Wire, Heat Only

Residential & Commercial 1 Stage Heating with no Fan.

R 24VAC Power  
C 24VAC Common  
W1/O/B 1st Stage Heat



#### 4 Wire, Cool Only

Residential & Commercial 1 Stage Cooling.

R 24VAC Power  
C 24VAC Common  
Y1 1st Stage Cool  
G Fan



#### 5 Wire, 1 Stage Cooling, 1 Stage Heat

Residential & Commercial 1 Stage Cooling, with 1 stage Gas Heat.

R 24VAC Power  
C 24VAC Common  
W1/O/B 1st Stage Heat  
Y1 1st Stage Cool  
G Fan



#### 5 Wire, 1 Stage Cooling, 1 Stage Heat

Residential & Commercial 1 Stage Cooling, with 1 stage Electric Heat.

R 24VAC Power  
C 24VAC Common  
W1/O/B 1st Stage Heat  
Y1 1st Stage Cool  
G Fan



#### 8 Wire, 2 Stage Cooling, 3 Stage Heat

Residential & Commercial 2 Stage Cooling, with 3 stage Gas Heat.

R 24VAC Power  
C 24VAC Common  
W1/O/B 1st Stage Heat  
W2 2nd Stage Heat  
W3 3rd Stage Heat  
Y1 1st Stage Cool  
Y2 2nd Stage Cool  
G Fan



# Installation Instructions

## Sample Wiring Diagrams

### Heat Pump Systems

#### 5 Wire, 1 Stage Cooling, 1 Stage Heat

Residential & Commercial Heat Pump with 'O' Reversing Valve

|        |  |
|--------|--|
| R      | 24VAC Power                            |
| C      | 24VAC Common                           |
| W1/O/B | Reversing Valve                        |
| Y1     | 1st Stage Compressor<br>(Cool or Heat) |
| G      | Fan                                    |



#### 6 Wire, 1 Stage Cooling, 2 Stage Heat

Residential & Commercial Heat Pump with 'O' Reversing Valve

|        |  |
|--------|--|
| R      | 24VAC Power                            |
| C      | 24VAC Common                           |
| W1/O/B | Reversing Valve                        |
| Y1     | 1st Stage Compressor<br>(Cool or Heat) |
| W2     | Aux Heat<br>Fan                        |
| G      | Fan                                    |



#### 7 Wire, 2 Stage Cooling, 3 Stage Heat

Residential & Commercial Heat Pump with 'O' Reversing Valve.

|        |  |
|--------|--|
| R      | 24VAC Power                            |
| C      | 24VAC Common                           |
| W1/O/B | Reversing Valve                        |
| W2     | 3rd Stage Heat                         |
| Y1     | 1st Stage Compressor<br>(Cool or Heat) |
| Y2     | 2nd Stage Compressor<br>(Cool or Heat) |
| G      | Fan                                    |

Setup Step 24 is set to 2  
(Number of Compressor Stages)



#### 8 Wire, 2 Stage Cooling, 4 Stage Heat

Residential & Commercial Heat Pump with 'O' Reversing Valve.

|        |  |
|--------|--|
| R      | 24VAC Power                            |
| C      | 24VAC Common                           |
| W1/O/B | Reversing Valve                        |
| W2     | 3rd Stage Heat                         |
| W3     | 4th Stage Heat                         |
| Y1     | 1st Stage Compressor<br>(Cool or Heat) |
| Y2     | 2nd Stage Compressor<br>(Cool or Heat) |
| G      | Fan                                    |

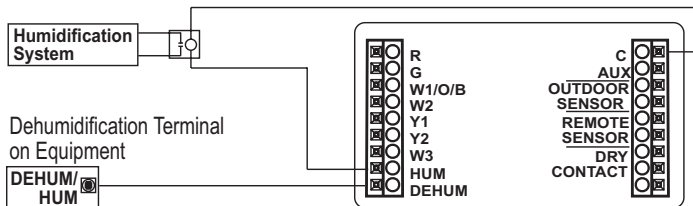
Setup Step 24 is set to 2  
(Number of Compressor Stages)



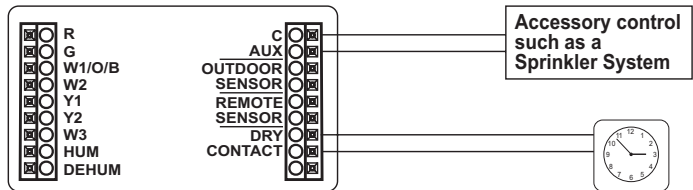
# Installation Instructions

## Sample Wiring Diagrams

### Humidification or Dehumidification



### Dry Contact and Aux Output



Accessory such as a  
Time Clock or door switch

## Installation Instructions: Test Operation

The Explorer thermostat has a diagnostic feature that enables testing of all outputs. This feature is contained in **Technician Setup**.

---

*To enter Technician Setup, press and hold the SETUP button for 10 seconds until all the icons appear. Follow the next steps to view settings and test equipment.*

---

1. Press MODE to view the version numbers of the thermostat.
2. Press MODE again to view the jumper settings and current state of the Dry Contact terminal.
3. Press MODE again and the scrolling display will read "TURN ON EQUIPMENT?" Press WARMER for Yes or COOLER for No.

If Yes is chosen, press WARMER to turn on heat or COOLER to turn on Cooling. The scrolling display will read "NOTHING ON." Next:

Press WARMER to turn on and cycle up through the heating stages.  
Press COOLER to turn the heating stages off. Press MODE to exit.

Press COOLER to turn on and cycle down through the cooling stages.  
Press WARMER to turn the cooling stages off. Press MODE to exit.

4. Press MODE until "CALIBRATE SENSORS?" appears on the scrolling display. Press WARMER for Yes or COOLER for No. Press MODE to select which sensor to calibrate. Use WARMER or COOLER to modify your selection.
5. Press MODE until "CONTROL HUM?" appears on the scrolling display. Press WARMER for On or COOLER for Off. Press MODE to continue.
6. Press MODE until "CONTROL DEHUM?" appears on the scrolling display. Press WARMER for On or COOLER for Off. Press MODE to continue.
7. Press MODE until "CONTROL AUX OUT?" appears on the scrolling display. Press WARMER for On or COOLER for Off. Press MODE to exit.

***To exit Technician Setup at any time, press the SETUP button. Technician Setup will automatically exit after 10 minutes if no buttons are pressed.***

# User Setup - Backlight Operation

## How to Change Settings in the Setup Screens

To enter Advanced Setup, press the **SETUP** button, then press **MODE**. Use the **WARMER** or **COOLER** buttons to adjust the value of your selection. Press **MODE** to advance to the next setup step. Press **SETUP** again to leave the setup screens.



## Backlight (Setup Steps 2-7)

### Backlight (setup step 2)

**Off** - Backlight turns on with any button press and turns off after 8 seconds.

**On** - Backlight is on continuously.

### Backlight Intensity Level (setup step 3)

The backlight can be adjusted between Off and seven levels of brightness.

**Night Dimmer (setup step 4)** - Selecting **On** allows for automatic dimming of the display at night.

### Night Dimmer Brightness (setup step 5)

Off through seven levels of brightness

**Night Dimmer Start Time (setup step 6)** - 12:00 am to 12:00 am

**Night Dimmer Stop Time (setup step 7)** - 12:00 am to 12:00 am

## Language (setup step 20)

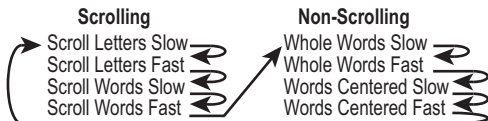
Setup step instructions on the scrolling display can be set for English, Spanish, or French.

**Press the SETUP button, then press MODE repeatedly until the Language setup step appears. Use the WARMER or COOLER buttons to make selection. Press MODE to advance to the next step. Press SETUP to leave the setup screens.**

# User Setup - Scrolling Screen & Display Options

## Scrolling Display Method (Setup Step 21)

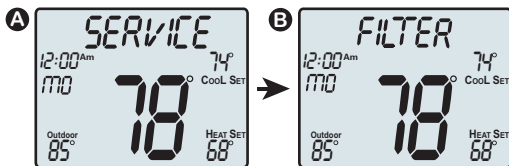
This option allows the user to choose how the scrolling text is displayed. Options are:



Press the **SETUP** button, then press **MODE** repeatedly until the Scrolling Method setup step appears. Use the **WARMER** or **COOLER** buttons to make selection. Press **MODE** to advance to the next step. Press **SETUP** to leave the setup screens.



Example of “Whole Words Centered”:



# User Setup

## Holiday

**The Holiday feature allows the thermostat to use temporary, energy saving settings without having to change regular programming.**



HOLIDAY

Holiday setup/programming at the local thermostat is limited to the number of days employing Holiday settings. When the optional Wi-Fi module is detected in the thermostat, local Holiday programming at the thermostat of the Holiday setup is not allowed. In this case Holiday setup and programming is accomplished with the Skyport Web App. Skyport gives the user extensive control over Holiday settings, including a 365 day calendar.

Press the HOLIDAY button to enter Holiday programming. (no Wi-Fi Module detected).

If there is not a Holiday period active:

Use the WARMER and COOLER buttons to choose the number of days desired to run the Holiday feature. To confirm your setting press the HOLIDAY button again.

When the thermostat is programmed for Holiday operation, and the thermostat is in the Program On mode. Holiday settings will take effect at 12:00AM of the next day. The thermostat will use the unoccupied mode and setpoints (see page 26) during the holidays.

If the Holiday button is pressed during an active Holiday period:

The active Holiday period may be cancelled by pressing the Mode button.

## Emergency Heat

**The Emergency Heat function is only available if your thermostat is set to control a Heat Pump.**



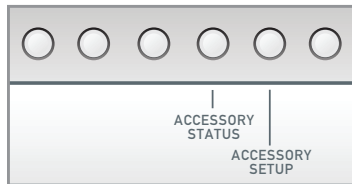
EMERGENCY  
HEAT

To initiate the Emergency Heat feature, Press the EMERGENCY button. During Emergency Heat operation the thermostat will turn on the fan and auxiliary stages of heat when there is a demand for heat. The 1st stage of heating and all stages of cooling will be unavailable. To exit Emergency Heat, press the EMERGENCY button.



# User Setup

## Wireless Module



The **Accessory Status** button allows the user to view the status of wired and wireless accessories. For many of the wireless devices this status includes: Battery Level, Signal Strength & LastTime Updated.

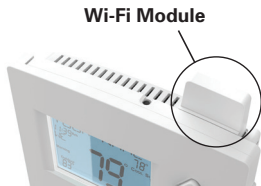
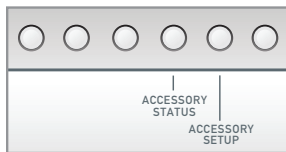
If there is an optional wireless module installed, the **Accessory Setup** button allows the user to link or connect wireless devices to the thermostat, or the thermostat to the network.

Explorer thermostats may use 1 of 2 different types of modules. They are:

1. Wi-Fi Module
2. Z-Wave Module


# User Setup

## Wi-Fi Module



Please follow the instructions included with the Wi-Fi module to connect to an Access Point or view status. The general instructions are below.

## Wi-Fi Module

If the  is present on the display then the thermostat is connected to the Wi-Fi Access Point. If just the “dot” of this icon appears, then just the Wi-Fi module is recognized.

Press the **Accessory Status** button, then press either the Cooler button to view connected Wi-Fi sensors, OR press the Warmer button to view the Wi-Fi status and settings.

Press the Mode button to step through the connected sensors or the Wi-Fi status screens listed below.

- Wi-Fi status (connecting, connected, etc.)
- Signal strength
- Access point name
- IP address
- MAC address
- Skyport status (connecting, connected, etc.)
- Local API status (Enabled, Disabled)
- Module version

• At any time press the **Accessory Status** button to leave the status screens.

Press the Accessory Setup button to enter Wi-Fi or Skyport setup:

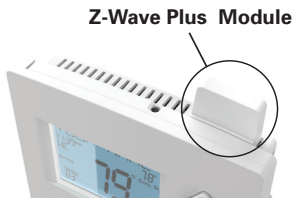
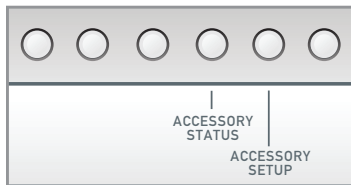
Press the Cooler button to configure Wi-Fi settings.

Press the Warmer button to join this thermostat to a Skyport account. If the thermostat is connected to Wi-Fi and the Internet, a Device ID will appear on the scrolling display of the thermostat. You will enter this code to add this thermostat to your Skyport account via a browser or the Skyport mobile app.

**Note:** To connect to Skyport Cloud Services, Setup Step #74 must be set to on.

# User Setup

## Z-Wave Plus Module



Please follow the instructions included with the Z-Wave module to join the Network or view status. The general instructions are below.

## Z-Wave Plus Module

Press the **Accessory Status** button to view the status of the thermostat's connection to the Network.

Press the **Accessory Setup** button to enter the Z-Wave Network setup:

Press the Cooler button to join the Z-Wave Network and start the connection process on the Z-Wave controller.

Press the Warmer button to remove this thermostat from the Z-Wave network. When prompted, press the Mode button to remove the thermostat from a connected controller. If the controller is not present, press the Fan button to remove the thermostat forcefully from the network.

### ***Notes regarding Explorer's Z-Wave plus module:***

- The Explorer Z-Wave Plus thermostat supports association group 1.
- This group supports up to 5 devices and is used for reporting setpoint changes performed by the user on the thermostat, and for reporting when the thermostat was reset locally by the user.
- The Z-Wave command set allows for the implementation of the thermostat's Home/Away and Vacation settings as described on page 19.
- Products from different manufactures and product categories can be part of the same network and non-battery powered nodes may act as repeaters, regardless of manufacturers.

## User Setup

**Note for WiFi and ZWAVE:** *In order for 3rd party devices (such as home automation systems) to communicate with your thermostat through its local API, Setup Step #75 must be set to ON.*

*If desired both Skyport access and API access may be both set to on, allowing 3rd party device access as well as Skyport access.*

## User Setup - Service Filter

These setup steps allow the user to monitor equipment runtimes and program service alerts. Service alerts are displayed in the scrolling marquee.

FAN ON  
AUTO



Press and hold FAN to clear service alert messages from the scrolling marquee.

Runtime hours or days appear in the clock display.



### Service Filter Runtime (setup steps 8-9, 16-17)

**Current Service Filter Runtime Hours (Setup Step 8)** - This counter keeps track of the number of hours of fan runtime in the Heating mode, Cooling mode, and in stand alone Fan operation. Press FAN to reset.

**Current Service Filter Calendar Days (Setup Step 9)** - This counter displays the total number of calendar days that have elapsed since the counter was reset to help the user track Fan runtime. Press FAN to reset.

**Set Service Filter Runtime Hours (Setup Step 16)** - This timer allows the user to specify the number of hours the fan will run before the "Replace Filter" alert will be displayed. Press COOLER continuously until **0** is displayed to disable this alert.

**Set Service Filter Calendar Days (Setup Step 17)** - This timer allows the user to specify the number of calendar days that will elapse before the "Replace Filter" alert will be displayed. Press COOLER continuously until **0** is displayed to disable this feature.

Press the **SETUP** button, then press **MODE** repeatedly until the desired setup step appears. Use the **WARMER** or **COOLER** buttons to make selection. Press **MODE** to advance to the next step. Press **SETUP** to leave the setup screens.



## User Setup - System Runtimes

*To view, set, or reset System Runtimes, press the SETUP button, then press MODE. Press MODE to advance to the desired setup step. Use the WARMER or COOLER buttons to adjust the value of your selection. Press SETUP again to leave the setup screens.*

### Heating and Cooling System Runtime - Energy Watch

(setup steps 10-13)

**Current Heat Runtime Hours (Setup Step 10)** - This counter keeps track of the number of hours the system has run in Heating. Press FAN to reset.

**Current Aux Strip Heat Runtime Hours (Setup Step 11)** - This counter keeps track of the number of hours the system has run in Auxiliary Heating. This setup step is only available when the thermostat jumpers are configured for Heat Pump and Electric Heat. Press FAN to reset.

**Current Cool Runtime Hours (setup step 12)** - This counter displays the number of hours the system has run in Cooling. Press FAN to reset.

**Current Override Hours** (setup step 13)

*This counter displays the number of hours the system has run in Override. Press FAN to reset.*

**UV Lamp Runtime** (setup steps 14, 18)

**Current UV Lamp Calendar Days (setup step 14)** - This counter displays the total number of calendar days that have elapsed since last reset to help the user track UV lamp runtime. Press FAN to reset.

**Set UV Lamp Calendar Days (setup step 18)** - This timer allows the user to specify the number of calendar days the UV Lamp will operate before the "Replace UV Lamp" alert will be displayed. Press COOLER continuously until **0** appears to disable this alert.

**Humidifier Runtime** (setup steps 15, 19)

**Current Humidifier Calendar Days (setup step 15)** - This counter displays the total number of calendar days that have elapsed since last reset to help the user track the Humidifier run-time. Press FAN to reset.

**Set Humidifier Calendar Days (setup step 19)** - This timer allows the user to specify the number of calendar days the Humidifier will run before the "Service Humidifier" alert will be displayed. Press COOLER continuously until **0** appears to disable this alert.

## User Setup - Time Period Programming

### Selecting Your Available Modes (setup step 1)

**Auto-Changeover** - Allows the thermostat to turn on heating or cooling based on room temperature demand. Also allows the manual selection of HEAT only or COOL only and OFF.

**Heat and Cool** - Allows the thermostat to turn on heating or cooling depending on which one has been manually selected. Auto-Changeover is not available when this is selected.

**Heat Only** - Allows the thermostat to only turn on HEAT or OFF modes.

**Cool Only** - Allows the thermostat to only turn on COOL or OFF modes.

### Programming a Daily Time Period Schedule\*

*\*not available when wi-fi module is present*

To enable (RUN) or turn ON the Time Period Schedule press the Program button momentarily.

To turn Off the Time Period Schedule stored program press this button again.

To alter the Time Period Schedule settings; press & hold this button for 5 seconds until the "Set Program" prompt appears. Modify the settings with the Warmer and Cooler buttons. Use the Mode button to advance through the steps. Press the Program button again to leave the setup screens.

#### Program Button



*(continued next page)*

## User Setup - Time Period Programming

### Programming a Daily Schedule (continued)

*Once the Set Program prompt appears the Mode button will step you through the settings as follows:*

**Select the Mode for the Occupied period** – Press the Warmer or Cooler buttons to choose the mode for the occupied period. The choices are: Off, Heat only, Cool only and AUTO changeover.

**Adjust the Weekday Occupied Cool Setpoint**

**Adjust the Weekday Occupied Heat Setpoint**

**Set the Unoccupied Mode** – Press the Warmer or Cooler buttons to choose the mode for the Unoccupied period. The thermostat is in Unoccupied when the Time Period Schedule is running and there is not an active Occupied period. The choices are: Off, Heat only, Cool only and AUTO changeover.

**Adjust the Unoccupied Cool Setpoint** – Press the Warmer or Cooler buttons to adjust the Cooling setpoint for times when the thermostat is in Unoccupied.

**Adjust the Unoccupied Heat Setpoint** – Press the Warmer or Cooler buttons to adjust the Heating setpoint for times when the thermostat is in Unoccupied.

**Adjust the Weekday Occupied Start Time**

**Adjust the Weekday Occupied Stop Time**

**Adjust the Weekend Occupied Start Time**

**Adjust the Weekend Occupied Stop Time**

**To save and exit** – Press the Program button.

**Setpoint Limits** (setup step 22) When this feature is at any setting other than no setpoint limits, the heat and cool setpoints can be restricted to preset levels, set in steps 23 and 24.

This feature allows the user to set 3 different levels of security: (0 - 3).

**No Setpoint Limits (0)** - When this level is selected, no restrictions are activated.

**Use Setpoint Limits (1)** - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 23 and 24.

**Maximum Heat Setpoint (setup step 23)** - (35° - 99°).

**Minimum Cool Setpoint (setup step 24)** - (35° - 99°).



# Installer Setup

**Force Program Mode (2)** - When this level is selected, the heat and cool setpoints can be restricted to preset levels, set in setup steps 23 and 24 and the thermostat is locked into the current mode and time period program setting and the FAN button is locked out.

**Setpoints Frozen (3)** - When this level is selected, the heat and cool setpoints, the current mode, the FAN button and time period program settings are locked.

## **Cycles Per Hour** (setup step 25)

The Cycles Per Hour setting may limit the number of times per hour your HVAC unit may energize. For example, at a setting of 6 cycles per hour the HVAC unit will only be allowed to energize once every 10 minutes. The Cycles Per Hour limit may be overridden and reset by pressing the WARMER or COOLER buttons on the thermostat. Settings are No Limit, 2, 3, 4, 5, or 6.

## **Compressor Minimum Off Minutes** (setup step 26)

This feature allows the user to set a minimum off time for the compressor. Settings are 5 mins., 3 mins., or 0 mins.

## **Minimum Heat/Cool Setpoint Difference** (setup step 27)

This feature allows the user to set the minimum gap between Heat and Cool setpoints in **AUTO** mode. Select from 0 to 6. If setup step 2 is not set for **AUTO-CHANGEOVER**, this step will not appear.

## **Number of Heat Stages** (setup step 28)

This setting assures proper stage callouts on the thermostat display for non-heat pump applications.

## **Number of Cool Stages** (setup step 29)

This setting assures proper stage callouts on the thermostat display for non-heat pump applications.

## **Number of Compressor Stages** (setup step 30)

*This feature is for heat pump application only.*

This feature allows the thermostat to control 1 or 2 compressor stages when configured for heat pump.

## **Number of Aux Stages** (setup step 31)

*This feature is for heat pump application only.*

This feature allows for proper Aux Heat Staging. (0-2 stages)

# Installer Setup

## Deadband Settings (setup steps 32 - 41)

The Deadband is the number of degrees or minutes that the thermostat waits before it initiates the stages of heating or cooling.

**1st Stage Deadband (setup step 32)** - Specifies the minimum temperature difference between the room temperature and the desired setpoint before the first stage of heating or cooling is allowed to turn on. (1 - 6 degrees) For example, if the heat setpoint is 68° and the 1st Stage deadband is set to 2 degrees, the room temperature will need to reach 66° before the heat turns on.

**2nd Stage Deadband (setup step 33)** - Specifies the additional minimum temperature difference after the first stage turns on before the second stage is activated. (0° - 10°)

**3rd Stage Deadband (setup step 34)** - Specifies the additional minimum temperature difference after the second stage turns on before the third stage is activated. (0° - 10°)

**4th Stage Deadband (setup step 35)** - (*Two Stage heat pump only*) - Specifies the additional minimum temperature difference after the third stage turns on before the final stage of strip heat is activated. (0° - 10°)

**Minutes Between 1st and 2nd Stage (setup step 36)** - Specifies the *minimum* time (in minutes) after the first stage turns on before the second stage can turn on. (0 - 60)

**Minutes Between 2nd and 3rd Stage (setup step 37)** - Specifies the *minimum* time (in minutes) after the second stage turns on before the third stage can turn on. (0 - 60)

**Minutes Between 3rd and 4th Stage (setup step 38)** - Specifies the *minimum* time (in minutes) after the third stage turns on before the final stage can turn on. (0 - 60)

**Second Stage Turnoff Point (setup step 39)** - Specifies whether second stage will turn off at first stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

**Third Stage Turnoff Point (Setup Step 40)** - Specifies whether third stage will turn off at second stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

**Fourth Stage Turnoff Point (Setup Step 41)** - Specifies whether fourth stage will turn off at third stage deadband or remain on until the room temperature demand is satisfied. Choose between Deadband or Setpoint.

# Installer Setup

## **Minutes of Fan Purge** (setup step 42)

When this feature is activated, the fan will turn on during an unoccupied period at a preset amount of time prior to Occupied 1. This preoccupancy fan purge timer may be set from zero to three hours, in 15 minute increments. Zero means this feature is turned off.

## **Fan Off Delay in Seconds** (setup step 53)

This feature allows the user to increase the cooling or electric strip heating efficiency of the system. The thermostat may be programmed to continue running the fan after a call for cooling or electric strip heating has been satisfied. This delay can be set for 0, 30, 60, 90, or 120 seconds. If set to 0, the fan will not run after a call for cooling or electric strip heating has been satisfied.

## **Warmup Period** (setup step 65)

This step specifies which mode (heat, cool, heat and cool or none) will be allowed to turn on before Occupied start time to precondition the air in the classroom.

## **Warmup Period Start Time** (setup step 66)

This step specifies how long before the Occupied start time that the classroom will be preconditioned. (0 - 4 hours)

# Installer Setup

## **Humidity and Dehumidity** (setup steps 46 -52)

**Humidity Only With Heat (Setup Step 46)** - When this step is set to ON, Humidity will not run without a demand for Heat.

**Fan With Humidity Demand (Setup Step 47)** - Specifies if the fan should be turned on with a demand for Humidity. (This step will only appear if step 41 is set to OFF.)

**Fan with Dehumidify (Set up Step 48)** - Specifies if the fan should be turned on with a demand for Dehumidify. (This step will only appear if step 42 is set to OFF.)

**Cool To Dehumidify (Setup Step 49)** - Specifies if the cooling equipment is allowed to turn on exclusively to lower room humidity. (If set to OFF the following two steps will not appear.)

**Max Occupied Dehum Overcool (Setup Step 50)** - Specifies how many degrees below the Cool setpoint the air conditioning will run to satisfy a Cool to Dehumidify demand during school hours. (0° - 20°)

**Max Unoccupied Dehum Overcool (Setup Step 51)** - Specifies how many degrees below the Cool setpoint the air conditioning will run to satisfy a Cool to Dehumidify demand outside of school hours. (0 to 20).

**Reheat Operation With Cool To Dehumidify (Setup Step 52)** - Specifies if electric strip heat is allowed to turn on during a Cool to Dehumidify demand to help maintain desired room temperature. This step is not available if Electric Heat is not present.

## **Humidity Output Polarity** (setup step 69)

**Humidity Output Normally Open** - means no voltage is sent to the HUM output when there is no demand for humidity.

**Humidity Output Normally Closed** - means voltage is sent to the HUM output when there is no demand for humidity.

## **Dehumidify Output Polarity** (setup step 70)

**Dehumidify Output Normally Open** - means no voltage is sent to the DEHUM output when there is no demand to dehumidify.

**Dehumidify Output Normally Closed** - means voltage is sent to the DEHUM output when there is no demand to dehumidify.

## **Dehumidify Only with Cooling** (setup step 71)

When set to ON, Dehumidify will only turn on with a 1st stage cooling demand.

When set to OFF, Dehumidify will turn on at any time that the room humidity exceeds the dehumidification setpoint.

# Installer Setup

## **Dry Contact Operation** (setup step 67 - 68)

### **Dry Contact Polarity** (setup step 67)

**Open (Normally Open)** - The dry contact is open until the connected device closes the circuit.

### **Dry Contact Use** (setup step 68)

**CONDENSATE** - If CONDENSATE is selected when the dry contact is active, the thermostat will lockout the compressor terminal(s) and “CONDENSATE PAN OVERFLOW” will appear on the display.

**OCCUPIED** - If OCCUPIED is selected, when the dry contact is active, the thermostat will be forced into the programmed occupied mode / setpoints and the ‘occupied’ icon will blink. This setting is useful for allowing a twist timer to force occupied settings.

**FDD**- If FDD is selected when the dry contact is active, “EQUIPMENT FAULT” will appear on the display.

**HOLIDAY** - If HOLIDAY is selected, when the dry contact is active, the thermostat will be forced into the programmed unoccupied mode / setpoints and the ‘unoccupied’ icon will blink.

**DOOR SWITCH** - If DOORSWITCH is selected, when the dry contact is active for more than 3 minutes, the thermostat set points will switch to OF (off), the equipment will turn off, and **DOOR OPEN** will appear on the display.

## **Skyport** (setup step 74)

Set to ON to allow access to Skyport services or to OFF to not allow access to Skyport services.

## **Local API** (setup step 75)

Set to ON to allow third-party software to interface with your thermostat such as home automation software.

## **Wired Sensor Type** (setup step 43)

Specifies the use of the connected, wired sensor. The choices are: Remote or Supply. The remote option allows control to the sensor, the supply does not.

# Installer Setup

## **Control To Temp Source** (setup step 44)

This feature allows the user to specify which temperature sensor source the thermostat will use to measure room temperature.

**Thermostat:** Uses the internal thermostat sensor only.

**Remote Sensor:** Uses wireless or wired sensors only.

**Average Of Remote Sensor And Thermostat:** Averages the temperatures of the remote sensor(s) and the thermostat.

**NOTE:** If a remote sensor is being used, the degree icon on the large room temperature display will blink.

## **Wireless Remote To Use** (setup step 45)

Specifies which single wireless remote sensor is to be used for control. This step only appears when prior step setting is **Wireless Remote**.

## **Fahrenheit or Celsius** (setup step 54)

This feature allows the thermostat to display temperature in Fahrenheit or Celsius.

## **Light Activation Sensitivity** (setup step 72)

With the lights on in the space, press the FAN button to set the sensitivity of the light sensor. This light level will be the minimum light level needed to bring in occupied setpoints in lieu of pressing the start button. Once started, occupied will remain in effect until the programmed stop time even if the lights remain on.

Upon pressing the FAN button; the scrolling display will read "Light sensor set"

**Note:** *The Skyport web app can track "lights on" runtime. This is accomplished by accumulating the hours that the light sensor of the thermostat recognizes that the lights are on.*

*To use this feature of Skyport, adjust the light activation sensitivity. Step 73 below does not need to be ON for Skyport to accumulate "lights on" runtime.*

## **Lights Function as Start** (setup step 73)

As described above, setting this step to ON allows turning on lights before school start time to function as if the START button had been pressed during school hours. Lights will bring in occupied setpoints for the balance of the day.

OFF = Light Activation not used.

ON = Light Activation is used.

# Installer Setup

## Auxiliary Output

This thermostat is equipped with a programmable auxiliary output. This output can be configured to be controlled from a variety of sources.

### **Aux Output Polarity** (setup step 55)

Specifies if the Auxiliary output will be Open (Normally Open) or Closed (Normally Closed).

### **Aux Output** ( setup step 56)

Specifies which source will control the Aux output.  
Choices are:

**Time** - Uses the internal clock of the thermostat.

**Temp** - Uses one of three temperature sources.

**External** -The Auxiliary Output is controlled from an external source, such as a mobile app.

**Economizer** - Used to control an economizer, the Aux Output is active when program is in any occupied time.

## Auxiliary Output Programming By Time

**If TIME is selected for the Aux Output, the following setup steps will appear:**

**Aux Output Days (setup step 57)** - Specifies if the Aux Output will be single day (1 DAY), weekday/weekend (5/1/1 DAY), or seven day (7 DAY) programmable.

**Day Of Week To Program (setup step 58)** - Specifies which day of week to program.

**Aux Output Start Time (setup step 59)** - Specifies the time of each day when the Aux output will turn on.

**Aux Output Stop Time (setup step 60)** - Specifies the time of each day when the Aux output will turn off.

**Copy (setup step 61)** - This step only appears if Aux Output Days (Setup Step 61) is set for 7 programmable output days. Press COOLER and then OUTDOOR to copy. Press WARMER and then OUTDOOR to program another day with a different setting.

# Installer Setup

## Auxiliary Output Programming By Temp

If **TEMP** is selected for the Aux Output, the following setup steps will appear:

**Aux Output Temp Source (setup step 62)** - Specifies what temperature source will be monitored for controlling the programmable output. The options are:

**Thermostat** - Temperature is monitored from the thermostat sensor.

**Outdoor Sensor** - Temperature is monitored from the Outdoor temperature sensor.

**Wired Remote** - Temperature is monitored from a wired sensor connected to the Remote Sensor terminals.

**Aux Output Trigger Point Temp (setup step 63)** - Specifies the temperature from the above selected source **above** which the Aux Output is triggered. A non-adjustable two degree deadband is applied to avoid frequent triggering. The 'N.O.' (Normally Open) or 'N.C.' (Normally Closed) function (Setup Step 64) can be altered to make the output trigger **below** the set temperature. Temps are adjustable from 0 - 120 degrees Fahrenheit.

## **Press Fan To Clear All Messages** (setup step 84)

This feature allows the user to clear all current error messages from the display.



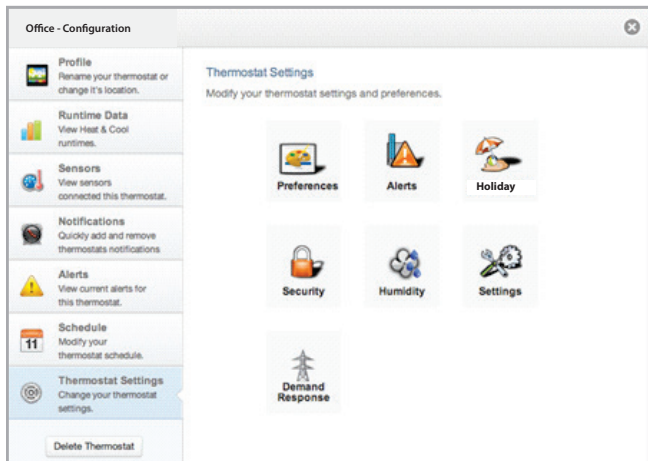
# Installer Setup - Automated Demand Response

## Overview

SF thermostats support the handling of specific signals from the utility provider. The utility generated signals carry pricing information, and setback actions, that alter the comfort settings of the thermostat in order to reduce energy usage on demand. This is known as Automated Demand Response (ADR). You must register to participate in a utility sponsored program, if offered by your local utility, to take advantage of this feature.

## Skyport Cloud Services

From the web application the user will select Thermostat Settings from the left column. Then the Demand Response button is selected.



# Installer Setup - Automated Demand Response

The Demand Response configuration page, shown below, is where the thermostat is configured to respond to the energy provider's signals. It also sets operational parameters for the thermostat.

The left column of the ADR configuration page allows or prevents access by the utility. Here communication with the utility and your thermostat may be turned On or Off.

The screenshot shows the 'Office - Configuration' window with a sidebar on the left and a main configuration area on the right. The sidebar contains menu items: Profile, Runtime Data, Sensors, Notifications, Alerts, Schedule, and Thermostat Settings. The main area is titled 'Automated Demand Response' and has two tabs: 'Configuration' (selected) and 'Overview'. In the center, there is a 'Demand Response' section with a power line icon and 'ON' and 'OFF' toggle buttons. Below this is a text box explaining Demand Response. On the right, there are several settings sections: 'Min & Max Settings' with 'Event Max Cool Setpoint' (89°F) and 'Event Min Heat Setpoint' (83°F); 'Static Settings' with 'Static Cool Setpoint' (77°F) and 'Static Heat Setpoint' (83°F); 'Offset Settings' with 'Cool Setpoint Offset' (+2) and 'Heat Setpoint Offset' (-3); and 'Price Settings' with 'Price Trigger' (\$ 0.5) and 'Dependent Action' (Observe Setpoint Offsets). At the bottom, there are 'Cancel' and 'Save' buttons.

Office - Configuration

Automated Demand Response

Configuration Overview

**Demand Response**

ON OFF

What is Demand Response?

It is a way for energy suppliers to automatically reduce load during high energy use periods. This reduces the strain on the powergrid while offering incentives to individuals who participate in demand response events.

**Min & Max Settings**

Event Max Cool Setpoint: 89° F

Event Min Heat Setpoint: 83° F

**Static Settings**

Static Cool Setpoint: 77° F

Static Heat Setpoint: 83° F

**Offset Settings**

Cool Setpoint Offset: +2

Heat Setpoint Offset: -3

**Price Settings**

Price Trigger: \$ 0.5

Dependent Action: Observe Setpoint Offsets

Cancel Save

# Installer Setup - Automated Demand Response

Selecting the Overview tab of the ADR page will cause a summary of ADR events to be displayed.

The screenshot shows a web interface for thermostat configuration. On the left is a sidebar menu with the following items:

- Profile**: Rename your thermostat or change its location.
- Runtime Data**: View Heat & Cool runtimes.
- Sensors**: View sensors connected this thermostat.
- Notifications**: Quickly add and remove thermostats notifications.
- Alerts**: View current alerts for this thermostat.
- Schedule**: Modify your thermostat schedule.
- Thermostat Settings**: Change your thermostat settings.

At the bottom of the sidebar is a **Delete Thermostat** button. The main content area is titled **Office - Configuration** and contains a modal window for **Automated Demand Response**. This modal has two tabs: **Configuration** and **Overview** (which is selected). The **Overview** tab displays a table of events:

| Event Id   | Event Type | Status  | Start Time        | Stop Time         |
|------------|------------|---------|-------------------|-------------------|
| 1233407844 | Price      | Success | 08/10/2014 1:00pm | 08/10/2014 2:00pm |
| 1233407844 | Price      | Success | 08/15/2014 4:00pm | 08/15/2014 5:00pm |

Below the table are **Cancel** and **Save** buttons. The background of the main interface shows icons for **Security**, **Humidity**, **Settings**, and **Demand Response**.

## Installer Setup - Automated Demand Response

### **ADR** (setup step 76)

Controls whether you want the thermostat to possibly respond to signals from the utility provider. Select ON to allow this and to have steps 76-82 appear.

### **ADR Action** (setup step 77)

Allows the user to determine what action is taken when an ADR event is received.

**Observe Setpoint Offsets** – will offset the heat and cool setpoints by the amounts specified in setup steps 79 and 80

**Observe Static Setpoints** – will set the heat and cool setpoints to the values specified in setup steps 77 and 78

### **Event Max Cool Setpoint** (setup step 78)

### **Event Min Heat Setpoint** (setup step 79)

Specifies the range of allowable setpoint adjustments to be enforced when any ADR signal has been received from the utility. Since you might be paying more for energy while an event is active, you can impose tighter limits on setpoint ranges that are only enforced during the event.

### **Static Cool Setpoint** (setup step 80)

### **Static Heat Setpoint** (setup step 81)

Specifies the setpoints that will come into use during an event when the ADR ACTION is set to OBSERVE STATIC SETPOINTS.

## Installer Setup - Automated Demand Response

**Cool Setpoint Offset** (setup step 82)

**Heat Setpoint Offset** (setup step 83)


Specifies how much the current setpoints in effect prior to an event will be altered during an event when the ADR ACTION is set to OBSERVE SETPOINT OFFSETS. The heat setpoint can be automatically lowered by 1 to 10 degrees while the cool setpoint can be automatically raised by 1 to 10 degrees

### **DISPLAY INDICATIONS WHEN AN ADR EVENT IS HAPPENING**

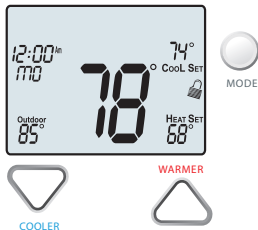
After setting your desired values for use during an ADR event, the scrolling display will give a little information when an event is pending or active. For instance, when an ADR event has been sent to your thermostat, you might see ADR STARTS 8/14 at 2:00pm to notify you of a pending event. Once active, you might see ADR STOPS 8/14 at 6:00pm. When an event is active, you can press any of COOLER, WARMER or MODE buttons, followed by the WARMER to opt out of the event.


# Installer Setup

## Locking/Unlocking the Keypad

To prevent unauthorized use of the thermostat, the front panel buttons may be disabled. To disable, or 'lock' the keypad, press and hold the MODE button. While holding the MODE button, press the WARMER and COOLER buttons together. The  icon will appear on the display, then release the buttons.

Press all three buttons in the order outlined above for keypad lockout



To **unlock** the keypad, press and hold the MODE button. While holding the MODE button, press the WARMER and COOLER buttons together. The  icon will disappear from the display, then release the buttons.

# Installer Setup

## Resetting the Thermostat to the Factory Default Settings

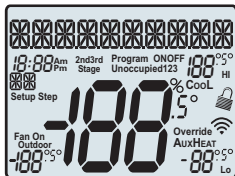
(for default values see page 39 Advanced Setup Table)

If, for any reason, you desire to return all the stored settings back to the factory default settings, follow the instructions below.

**WARNING:** This will reset all Time Period and Advanced Programming to the default settings. Any information entered prior to this reset may be permanently lost. Additionally, if a Z-Wave module is installed, resetting the thermostat will not reset the Z-Wave module. To reset the Z-Wave module, please follow the instructions on Page 22.

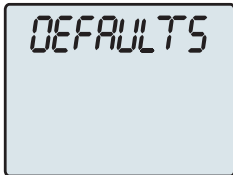
- 1 Press and hold SETUP for 10 seconds. All icons will appear on the display.

Keep pressing the SETUP button until you see this screen.



- 2 After all the icons appear, release SETUP. Press and hold FAN for 5 seconds. DEFAULTS will appear on the display.

Keep pressing the FAN button until you see this screen.



- 3 After DEFAULTS appears, release FAN. Press SETUP to return to normal operation.



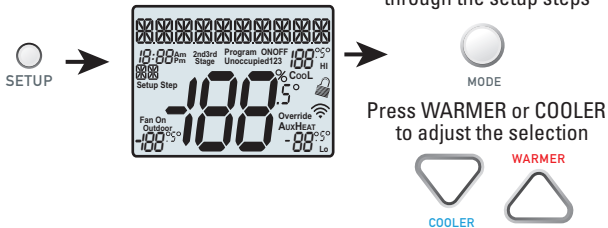
## Technician Setup

To enter Technician Setup, press and hold the **SETUP** button for 5 seconds. After all the icons appear, press **MODE**. The version number of the thermostat will appear in the scrolling text. Press **MODE** to advance to the next step. Use the **WARMER** or **COOLER** buttons to adjust the value of your selection. To leave Technician Setup, press **SETUP**.

Hold for 10 seconds

All icons appear

Press **MODE** to advance through the setup steps



**Technician Setup is for diagnostic and testing purposes and is intended for use by a qualified technician. See page 14 for more detailed instructions.**

**Technician Setup contains the following options:**

- View the version number of the thermostat.
- View the Dip Switch equipment type settings.
- View the state of the Dry Contact.
- Turn on equipment outputs for testing.
- Calibrate thermostat, remote, and humidity sensors.
- Control HUM output (On or Off)
- Control DEHUM output (On or Off)
- Control AUX output (On or Off)



# Advanced Setup Table

Default = Factory Default Setting

| Step# | Description                          | Pg# | Range  | Default                  |
|-------|--------------------------------------|-----|--|--------------------------|
| 1     | Available Mode                       | 26  | Auto Changeover,<br>Heat and Cool, Heat Only,<br>Cool Only   | Heat/Cool<br>Auto/Off    |
| 2     | Backlight                            | 17  | On, Off  | Off                      |
| 3     | Backlight Level                      | 17  | Off thru 7 levels of brightness  | Level 5                  |
| 4     | Night Dimmer                         | 17  | On/Off   | Off                      |
| 5     | Night Dimmer Brightness              | 17  | Off thru 7 levels of brightness  | 2 (20%)                  |
| 6     | Night Dimmer StartTime               | 17  | 12A-12A  | 8:00P                    |
| 7     | Night Dimmer StopTime                | 17  | 12A-12A  | 6:00A                    |
| 8     | Current Service Filter Runtime Hours | 24  | 0-1999 Hours   | 0                        |
| 9     | Current Service Filter Calendar Days | 24  | 0-720 Days   | 0                        |
| 10    | Current Heat Runtime Hours           | 25  | 0-1999 Hours   | 0                        |
| 11    | Current Aux Heat Runtime Hours       | 25  | 0-1999 Hours   | 0                        |
| 12    | Current Cool Runtime Hours           | 25  | 0-1999 Hours   | 0                        |
| 13    | Current Override Hours               | 25  | 0-1999 Hours   | 0                        |
| 14    | Current UV Lamp Calendar Days        | 25  | 0-720 Days   | 0                        |
| 15    | Current Humidifier Calendar Days     | 25  | 0-720 Days   | 0                        |
| 16    | Set Service Filter Runtime Hours     | 24  | 0-1950 hours   | 0                        |
| 17    | Set Service Filter Calendar Days     | 24  | 0-720 Days   | 0                        |
| 18    | Set UV Lamp Calendar Days            | 25  | 0-720 Days   | 0                        |
| 19    | Set Humidifier Calendar Days         | 25  | 0-720 Days   | 0                        |
| 20    | Language                             | 17  | English, Espanol, Francais   | English                  |
| 21    | Scrolling Method                     | 18  | L-R Slow, L-R Fast, Word L-R<br>Slow, Word L-R Fast, Whole<br>Word L Slow, Whole Word R<br>Slow, Whole Word Ctr. Fast,<br>Whole Word Ctr. Slow | Whole Words<br>Ctr. Fast |
| 22    | Setpoint Limits                      | 27  | 0 - 3  | 0                        |
| 23    | Max Heat Setpoint                    | 27  | 35 - 99 Degrees  | 74                       |
| 24    | Min Cool Setpoint                    | 27  | 35 - 99 Degrees  | 70                       |
| 25    | Cycles Per Hour                      | 28  | No Limit, 2, 3, 4, 5, 6  | 6                        |
| 26    | Compressor Minimum Off Minutes       | 28  | 0, 3, 5 Minutes  | 5                        |
| 27    | Min. Heat/Cool Setpoint Difference   | 28  | 0 - 6 Degrees  | 2                        |
| 28    | Number of Heat Stages                | 28  | 0 - 3  | 2                        |
| 29    | Number of Cool Stages                | 28  | 0 - 2  | 1                        |
| 30    | Number Of Compressor Stages          | 28  | 1, 2   | 1                        |
| 31    | Number of Aux Stages+B64             | 28  | 0, 1, 2  | 0                        |

*cont. next page*

# Advanced Setup Table

Default = Factory Default Setting

| Step# | Description                        | Pg# | Range   | Default                     |
|-------|------------------------------------|-----|---|-----------------------------|
| 32    | 1st Stage Deadband                 | 29  | 1 - 6 Degrees   | 2                           |
| 33    | 2nd Stage Deadband                 | 29  | 0 - 10 Degrees  | 2                           |
| 34    | 3rd Stage Deadband                 | 29  | 0 - 10 Degrees  | 2                           |
| 35    | 4th Stage Deadband                 | 29  | 0 - 10 Degrees  | 2                           |
| 36    | Minutes Between 1st and 2nd Stage  | 29  | 0 - 60 Minutes  | 2                           |
| 37    | Minutes Between 2nd and 3rd Stage  | 29  | 0 - 60 Minutes  | 2                           |
| 38    | Minutes Between 3rd and 4th Stage  | 29  | 0 - 60 Minutes  | 2                           |
| 39    | 2nd Stage Turnoff Point            | 29  | Deadband, Setpoint  | Deadband                    |
| 40    | 3rd Stage Turnoff Point            | 29  | Deadband, Setpoint  | Deadband                    |
| 41    | 4th Stage Turnoff Point            | 29  | Deadband, Setpoint  | Deadband                    |
| 42    | Minutes of Fan Purge               | 30  | 0-3:00, 15 min. increments -0 = off   | 0                           |
| 43    | Wired Sensor Type                  | 32  | Remote, Supply  | Remote                      |
| 44    | Control to Temp Source             | 33  | Thermostat, Wired Remote*, Wireless Remote, Average of Wireless Remotes, Average Thermostat and Wired Remote*, Average All Sensors. *Option only if prior step = "Remote" | Thermostat                  |
| 45    | Wireless Remote to Use             | 33  | list of wifi sensors currently linked to thermostat. *This step only appears if prior step = "Wireless Remote"  | first linked sensor in list |
| 46    | Humidity Only With Heat            | 31  | On, Off   | Off                         |
| 47    | Fan With Humidity Demand           | 31  | Fan On, Fan Off   | Fan Off                     |
| 48    | Fan With Dehumidify Demand         | 31  | Fan On, Fan Off   | Fan Off                     |
| 49    | Cool To Dehumidify                 | 31  | On, Off   | Off                         |
| 50    | Maximum Occupied Dehum Overcool    | 31  | 0 - 20 Degrees  | 2                           |
| 51    | Maximum Unoccupied Dehum. Overcool | 31  | 0 - 20 Degrees  | 2                           |
| 52    | Reheat Operation W/Cool To Dehum.  | 31  | On, Off   | Off                         |
| 53    | Fan Off Delay                      | 30  | 0 - 120 Seconds   | 0                           |
| 54    | F/C                                | 33  | Fahrenheit (F), Celsius (C)   | F                           |
| 55    | Aux Output Polarity                | 34  | Open, Closed  | Open                        |
| 56    | Aux Output                         | 34  | Time, Temperature, External, Economizer   | Time                        |
| 57    | Aux Output Program Days            | 34  | 1 Day, 5/1/1 Day, 7 Day   | 1                           |
| 58    | Day Of Week To Program             | 34  | Sunday - Monday (S - M)   | MTWTFSS                     |
| 59    | Aux Output Start Time              | 34  | 12am - 12am   | 7am                         |
| 60    | Aux Output Stop Time               | 34  | 12am - 12am   | 9pm                         |
| 61    | Copy                               | 34  | Yes, No   | No                          |

cont. next page

# Advanced Setup Table

Default = Factory Default Setting

| Step# | Description                     | Pg# | Range  | Default            |
|-------|---------------------------------|-----|--|--------------------|
| 62    | Aux Output Temp Source          | 35  | Tstat, Outdoor, Remote, Ext.                       | Remote             |
| 63    | Aux Output Trigger Point Temp   | 35  | 0 - 120 Degrees                                    | 65                 |
| 64    | Override Hours                  | 8   | 0-6  | 1                  |
| 65    | Warmup Period                   | 30  | None, Heat Only, Cool Only, Heat and Cool          | None               |
| 66    | Warmup Period Start Time        | 30  | 0 - 4 hrs prior to wkday start time                | 0                  |
| 67    | Dry Contact Polarity            | 32  | Open, Closed                                       | Open               |
| 68    | Dry Contact Use                 | 32  | Condensate Pan, Occupied, FDD, Holiday, Doorswitch | Occupied           |
| 69    | Humidity Polarity               | 31  | Open, Closed                                       | Open               |
| 70    | Dehumidify Polarity             | 31  | Open, Closed                                       | Open               |
| 71    | Dehumidify only with Cooling    | 31  | On, Off  | On                 |
| 72    | Light Activation Sensitivity    | 33  | Press Fan to set current level                     |                    |
| 73    | Lights function as Start        | 33  | On, Off.   | Off                |
| 74    | Skyport                         | 32  | On, Off  | On                 |
| 75    | Local API                       | 32  | On, Off  | Off                |
| 76    | ADR                             | 39  | On, Off  | On                 |
| 77    | ADR Action                      | 39  | Observe Setpoint Offsets, Observe Static Setpoints | Observe SP Offsets |
| 78    | Event Max Cool Setpoint         | 39  | 65 - 90  | 90                 |
| 79    | Event Min Heat Setpoint         | 39  | 50 - 85  | 50                 |
| 80    | Static Cool Setpoint            | 39  | 65 - 85  | 82                 |
| 81    | Static Heat Setpoint            | 39  | 65 - 85  | 60                 |
| 82    | Cool Setpoint Offset            | 40  | 1 to 10  | 4                  |
| 83    | Heat Setpoint Offset            | 40  | -1 to -10  | -4                 |
| 84    | Press Fan To Clear All Messages | 35  |  |                    |

## Troubleshooting

- **SYMPTOM:** The air conditioning does not attempt to turn on.  
**CAUSE:** The compressor timer lockout may prevent the air conditioner from turning on for a period of time.  
**REMEDY:** Consult the Owner's Manual in the Installer Setup section to defeat the Cycles Per Hour (*page 22*).
- **SYMPTOM:** The display is blank.  
**CAUSE:** Lack of proper power.  
**REMEDY:** Make sure the power is on to the furnace and that you have 24vac between **R & C**.
- **SYMPTOM:** The air conditioning does not attempt to turn on.  
**CAUSE:** The cooling setpoint is set too high.  
**REMEDY:** Lower the cooling setpoint or lower the cooling set-point limit. *See Setpoint Limits (page 22)*.
- **SYMPTOM:** The heating does not attempt to turn on.  
**CAUSE:** The heating setpoint is set too low.  
**REMEDY:** Raise the heating setpoint or raise the heating set-point limit. *See Setpoint Limits (page 22)*.
- **SYMPTOM:** When controlling a residential heat pump, and asking for cooling, the heat comes on.  
**CAUSE:** The thermostat reversing valve jumper is set for "**B**".  
**REMEDY:** Set the reversing valve jumper for "**O**".
- **SYMPTOM:** When calling for cooling, both the heat and cool come on.  
**CAUSE:** The thermostat equipment jumper is configured for "**HP**" and the HVAC unit is a Gas/Electric.  
**REMEDY:** Set the equipment jumper for "**Gas**".
- **SYMPTOM:** When the Program button is pressed, the display reads "DISABLED".  
**CAUSE:** Program mode is set to "**NON PROGRAM**".  
**REMEDY:** Set Program Mode (Setup 1) to 1, **5/2**, or **7 Day**. *See Selecting Your Program Mode (page 26)*.

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# Warranty

**One-Year Warranty** - This Product is warranted to be free from defects in material and workmanship. If it appears within one year from the date of original installation, whether or not actual use begins on that date, that the product does not meet this warranty, a new or remanufactured part, at the manufacturer's sole option to replace any defective part, will be provided without charge for the part itself provided the defective part is returned to the distributor through a qualified servicing dealer.

**THIS WARRANTY DOES NOT INCLUDE LABOR OR OTHER COSTS** incurred for diagnosing, repairing, removing, installing, shipping, servicing or handling of either defective parts or replacement parts. Such costs may be covered by a separate warranty provided by the installer.

**THIS WARRANTY APPLIES ONLY TO PRODUCTS IN THEIR ORIGINAL INSTALLATION LOCATION AND BECOMES VOID UPON REINSTALLATION.**

**LIMITATIONS OF WARRANTIES – ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH THE LIMITED WARRANTY IS GIVEN. SOME STATES DO NOT ALLOW LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE MAY NOT APPLY TO YOU. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER.**

**ALL WORK UNDER THE TERMS OF THIS WARRANTY SHALL BE PERFORMED DURING NORMAL WORKING HOURS. ALL REPLACEMENT PARTS, WHETHER NEW OR REMANUFACTURED, ASSUME AS THEIR WARRANTY PERIOD ONLY THE REMAINING TIME PERIOD OF THIS WARRANTY.**

**THE MANUFACTURER WILL NOT BE RESPONSIBLE FOR:**

1. Normal maintenance as outlined in the installation and servicing instructions or owner's manual, including filter cleaning and/or replacement and lubrication.
2. Damage or repairs required as a consequence of faulty installation, misapplication, abuse, improper servicing, unauthorized alteration or improper operation.
3. Failure to start due to voltage conditions, blown fuses, open circuit breakers or other damages due to the inadequacy or interruption of electrical service.
4. Damage as a result of floods, winds, fires, lightning, accidents, corrosive environments or other conditions beyond the control of the Manufacturer.
5. Parts not supplied or designated by the Manufacturer, or damages resulting from their use.
6. Manufacturer products installed outside the continental U.S.A., Alaska, Hawaii, and Canada.
7. Electricity or fuel costs or increases in electricity or fuel costs for any reason whatsoever including additional or unusual use of supplemental electric heat.
8. ANY SPECIAL INDIRECT OR CONSEQUENTIAL PROPERTY OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER. Some states do not allow the exclusion of incidental or consequential damages, so the above may not apply to you.

This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

# Programming Worksheet - see page 23

| DAY              | PERIOD     | START TIME | COOL | HEAT |   |
|------------------|------------|------------|------|------|---|
| <b>MONDAY</b>    | Unoccupied |            |      |      |   |
|                  | Occupied 1 |            |      |      |   |
|                  | Occupied 2 |            |      |      |   |
|                  | Occupied 3 |            |      |      |   |
| <b>TUESDAY</b>   | Unoccupied |            |      |      | <i>Copy Mon to Tues</i><br><input type="checkbox"/> No<br><input type="checkbox"/> Yes  |
|                  | Occupied 1 |            |      |      |   |
|                  | Occupied 2 |            |      |      |   |
|                  | Occupied 3 |            |      |      |   |
| <b>WEDNESDAY</b> | Unoccupied |            |      |      | <i>Copy Tues to Wed</i><br><input type="checkbox"/> No<br><input type="checkbox"/> Yes  |
|                  | Occupied 1 |            |      |      |   |
|                  | Occupied 2 |            |      |      |   |
|                  | Occupied 3 |            |      |      |   |
| <b>THURSDAY</b>  | Unoccupied |            |      |      | <i>Copy Wed to Thurs</i><br><input type="checkbox"/> No<br><input type="checkbox"/> Yes |
|                  | Occupied 1 |            |      |      |   |
|                  | Occupied 2 |            |      |      |   |
|                  | Occupied 3 |            |      |      |   |
| <b>FRIDAY</b>    | Unoccupied |            |      |      | <i>Copy Thurs to Fri</i><br><input type="checkbox"/> No<br><input type="checkbox"/> Yes |
|                  | Occupied 1 |            |      |      |   |
|                  | Occupied 2 |            |      |      |   |
|                  | Occupied 3 |            |      |      |   |
| <b>SATURDAY</b>  | Unoccupied |            |      |      | <i>Copy Fri to Sat</i><br><input type="checkbox"/> No<br><input type="checkbox"/> Yes   |
|                  | Occupied 1 |            |      |      |   |
|                  | Occupied 2 |            |      |      |   |
|                  | Occupied 3 |            |      |      |   |
| <b>SUNDAY</b>    | Unoccupied |            |      |      | <i>Copy Sat to Sun</i><br><input type="checkbox"/> No<br><input type="checkbox"/> Yes   |
|                  | Occupied 1 |            |      |      |   |
|                  | Occupied 2 |            |      |      |   |
|                  | Occupied 3 |            |      |      |   |

Patent Pending



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